

AD-A186 693

PROPERTIES OF STABILIZED SUB-MICRON PHOSPHOLIPID
VESICLES(U) CALIFORNIA INST OF TECH PASADENA
J D BALDESCHWIELER 29 MAY 87 ARO-23471. 2-CH

1/1

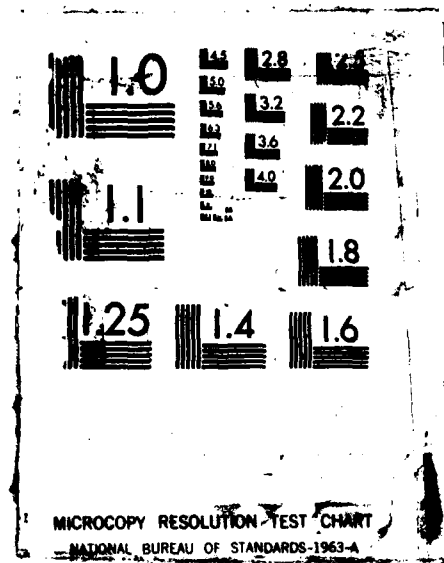
UNCLASSIFIED

DAAL03-86-K-0060

F/G 6/2

NL





REPORT DOCUMENTATION PAGE

AD-A186 693

AD-A186 693		1b. RESTRICTIVE MARKINGS	
		3. DISTRIBUTION/AVAILABILITY OF REPORT Approved for public release; distribution unlimited.	
4. PERFORMING ORGANIZATION REPORT NUMBER(S)		5. MONITORING ORGANIZATION REPORT NUMBER(S) ARO 23471.2-CH	
6a. NAME OF PERFORMING ORGANIZATION California Institute of Technology	6b. OFFICE SYMBOL (If applicable)	7a. NAME OF MONITORING ORGANIZATION U. S. Army Research Office	
6c. ADDRESS (City, State, and ZIP Code) Pasadena, CA 91125		7b. ADDRESS (City, State, and ZIP Code) P. O. Box 12211 Research Triangle Park, NC 27709-2211	
8a. NAME OF FUNDING/SPONSORING ORGANIZATION U. S. Army Research Office	8b. OFFICE SYMBOL (If applicable)	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER DAAL03-86-K-0060	
8c. ADDRESS (City, State, and ZIP Code) P. O. Box 12211 Research Triangle Park, NC 27709-2211		10. SOURCE OF FUNDING NUMBERS	
		PROGRAM ELEMENT NO.	PROJECT NO.
		TASK NO.	WORK UNIT ACCESSION NO.
11. TITLE (Include Security Classification) Properties of Stabilized Sub-Micron Phospholipid Vesicles (Unclassified)			
12. PERSONAL AUTHOR(S) John D. Baldeschwieler			
13a. TYPE OF REPORT FINAL	13b. TIME COVERED FROM 4/15/86 TO 4/14/87	14. DATE OF REPORT (Year, Month, Day) 1987 May 29	15. PAGE COUNT 1
16. SUPPLEMENTARY NOTATION The view, opinions and/or findings contained in this report are those of the author(s) and should not be construed as an official Department of the Army position, policy, or decision, unless so designated by other documentation.			
17. COSATI CODES		18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)	
FIELD	GROUP	SUB-GROUP	
		Properties of stabilized sub-micron phospholipid vesicles	
19. ABSTRACT (Continue on reverse if necessary and identify by block number) See reverse side			
20. DISTRIBUTION/AVAILABILITY OF ABSTRACT <input type="checkbox"/> UNCLASSIFIED/UNLIMITED <input type="checkbox"/> SAME AS RPT. <input type="checkbox"/> DTIC USERS		21. ABSTRACT SECURITY CLASSIFICATION Unclassified	
22a. NAME OF RESPONSIBLE INDIVIDUAL		22b. TELEPHONE (Include Area Code)	22c. OFFICE SYMBOL

DTIC
ELECT
NOV 02 1987
S D

19. Abstract

→ The principal focus of research activity under the support Grant No. DAAL03-86-K-0060 has been the characterization of phospholipid vesicles formed with polymerizable disulfide phosphatidylcholines. Structures with the polymerizable groups in both the alpha and terminal positions of the side chain fatty acids have been synthesized and the resulting polymerized structures characterized. We have discovered that it is possible to produce very small and highly stable polymerized micellular structures using short chain phosphatidylcholines. Extremely stable phospholipid vesicles can be produced using long chain fatty acids polymerized in the alpha position.

We have also studied novel synthetic glycolipids incorporated into phospholipid vesicle structures. These synthetic glycolipids modify the lipid phase behavior substantially and produce vesicles which are stable to lyophilization. The details of these studies have been prepared for publication, and are given in the attached preprint entitled "Modification of Lipid Phase Behavior With Membrane Bound Cryoprotectants" by Raymond P. Goodrich, Tracy M. Handel, and John D. Baldeschwieler.

Accession For		
NTIS	CHAEI	<input type="checkbox"/>
DTIC	TAB	<input type="checkbox"/>
Unannounced		<input type="checkbox"/>
Justification		
By		
Distribution		
Availability		
Other		

PROPERTIES OF STABILIZED SUB-MICRON PHOSPHOLIPID VESICLES

FINAL REPORT

DR. JOHN D. BALDESCHWIELER

May 29, 1987

U. S. ARMY RESEARCH OFFICE

GRANT NUMBER DAAL03-86-K-0060

CALIFORNIA INSTITUTE OF TECHNOLOGY
PASADENA, CALIFORNIA 91125



APPROVED FOR PUBLIC RELEASE;
DISTRIBUTION UNLIMITED

Accession For	
NTIS CRAB	<input checked="" type="checkbox"/>
DIC Lab	<input type="checkbox"/>
Unrestricted	<input type="checkbox"/>
Justification	
By	
Distribution	
Availability	
Date	
A-1	

I. Statement of Problems Studied:

Submicron vesicles stabilized by disulfide polymerization, and using synthetic glycolipids have been characterized.

II. Summary of the Most Important Results:

The principal focus of research activity under the support Grant No. DAAL03-86-K-0060 has been the characterization of phospholipid vesicles formed with polymerizable disulfide phosphatidylcholines. Structures with the polymerizable groups in both the alpha and terminal positions of the side chain fatty acids have been synthesized and the resulting polymerized structures characterized. We have discovered that it is possible to produce very small and highly stable polymerized micellar structures using short chain phosphatidylcholines. Extremely stable phospholipid vesicles can be produced using long chain fatty acids polymerized in the alpha position.

We have also studied novel synthetic glycolipids incorporated into phospholipid vesicle structures. These synthetic glycolipids modify the lipid phase behavior substantially and produce vesicles which are stable to lyophilization. The details of these studies have been prepared for publication, and are given in the attached preprint entitled "Modification of Lipid Phase Behavior With Membrane Bound Cryoprotectants" by Raymond P. Goodrich, Tracy M. Handel, and John D. Baldeschwieler.

III List of All Publications and Technical Reports Published:

1. Tracy M. Handel and John D. Baldeschwieler, Proceedings of the Chemical Defense Research Conference, Aberdeen Proving ground, MD. (1985). "Development of Microencapsulation Techniques Using Stabilized Phospholipid Vesicles".
2. Raymond P. Goodrich, Tracy M. Handel, and John D. Baldeschwieler, *Biochimica et Biophysica Acta* (submitted). "Modification of Lipid Phase Behavior With Membrane Bound Cryoprotectants".

Abstracts submitted to the Biophysics Meeting

1. "A Novel Synthetic Glycolipid for Assessing Lipid-Carbohydrate Interactions", Raymond P. Goodrich and John D. Baldeschwieler, California Institute of Technology, Dept. of Chemistry, Pasadena, CA 91125.
2. "Characterization of Disulfide Polymerized Phosphatidylcholines", Tracy M. Handel and John D. Baldeschwieler, California Institute of Technology, Dept. of Chemistry, Pasadena, CA 91125.

IV. List of All Participating Scientific Personnel:

Dr. Sean Sullivan (postdoctoral research fellow)
Ms. Tracy Handel (graduate student)
Mr. Raymond Goodrich (graduate student)

END
DATE
FILMED
JAN
1988